

RMT, Inc.
100 Verdae Blvd.
P.O. Box 16778
Greenville, SC 29606
Phone: 803-281-0030
FAX: 803-281-0288

August 17, 1992

Mr. Ralph O. Howard, Jr.
Remedial Project Manager
U.S. Environmental Protection Agency - Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Subject: Medley Farm RD/RA - Responses to Comments on Remedial Design Work Plan.
(Reference Letter Dated July 31, 1992. Ralph O. Howard, Jr. to Mary Jane Norville).

Dear Ralph:

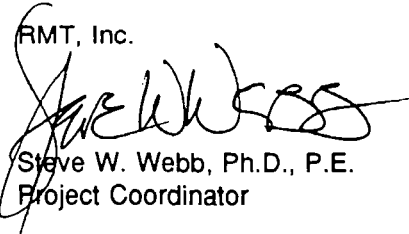
Attached are the responses of the Medley Farm Site Steering Committee and RMT to the US EPA's comments on the Remedial Design Work Plan. These responses are attached for your review and information. The original Agency comment is immediately followed by our response which is presented in bold type for clarity.

As we discussed, our major project concerns relate to the those issues which affect the ongoing supplemental field activities. It is our understanding that we have resolved the technical issues presented. Please review the attached responses and advise me of any further questions or concerns that Agency reviewers might have. We would like to finalize the Remedial Design Work Plan as soon as possible.

I look forward to hearing from you soon.

Very truly yours,

RMT, Inc.


Steve W. Webb, Ph.D., P.E.
Project Coordinator

cc: Medley Farm Site Steering Committee Distribution



**Responses to US EPA
Comments on the Medley Farm Remedial Design Work Plan
Cherokee County, South Carolina**

August 17, 1992

GENERAL COMMENTS

1. EPA and the State of South Carolina have concerns regarding the adequacy of the current arrangement for monitoring site conditions. Monitoring of existing site conditions is a remedy component identified in the Record of Decision, page 94, second bullet, and also is referred to in the Statement of Work (SOW) at page 2, "Remedy Components." A.1. (a), last sentence. This is distinct from remedy monitoring, required for both soil vacuum extraction and groundwater remediation, under B. and C. respectively of the Remedy Components part of the SOW (pages 3-7). Specific problems are the following:

GENERAL RESPONSE

The Medley Farm Site Steering Committee (MFSSC) and RMT are concerned by the timing and nature of the Agency comment regarding the adequacy of site monitoring arrangements. The specifics of site monitoring were initially set forth in the Record of Decision (ROD) and then further defined by the Statement of Work (SOW). The SOW was then jointly negotiated and agreed to by the EPA, SC DHEC, the MFSSC, and RMT. Since the signing of the Consent Order, we have also submitted an FSAP and QAPP, providing a lengthy discourse on our proposed additions to the existing RI/FS database. If the US EPA and SC DHEC had concerns regarding the adequacy of the site monitoring program, we question why both parties waited until submittal of the Remedial Design Work Plan to share these concerns with us.

General comments 1, 2, 4 and 5 relate more to the FSAP than to the RD Work Plan. It was our understanding that the FSAP had been carefully reviewed and was approved for implementation. The tone of these comments now suggests to us that Agency reviewers no longer view the FSAP as an approved document. It is imperative that all technical reviewers raise their technical and regulatory concerns as early in the planning process as possible and in a timely manner if we are to maintain project continuity.

Since the signing of the RD/RA Consent Decree, we have enjoyed what has been an effective and communicative working relationship with the Agency. We would like to see this relationship continue and will take all reasonable steps to ensure this. However, we would like to point out that Remedial Design projects require a substantial measure of resource coordination, logistical planning and financial approvals for proper implementation. Major technical comments submitted after designated review loops reduce our ability to plan for and control project costs.

We have charged our technical consultant, RMT, with the responsibility for conducting their activities in a timely and cost-effective manner. The net financial effect of incorporating this latest round of Agency comments prior to implementing the approved FSAP is not inconsequential. It is essential that the Agency communicate their technical and regulatory concerns to us in a timely and appropriate manner as agreed to under the Consent Decree.

- a. Certain of the outermost wells were last sampled in late 1990 (in the RI Phase II), almost two years ago (BW-3, SW-101, BW-110, SW-102, SW-103, BW-109, SW-104). At that time all of these except BW-109 were non-detect for VOCs, but this may have changed in the interim. In order to maintain an understanding of site groundwater conditions, all site wells should be sampled at one time in the near future, preferably at the next quarterly sampling. Specific intervals for sampling of the different wells can then be set out in a site/remedy monitoring plan (see b directly below).

The SOW expressly sets forth the requirements for monitoring of existing site conditions. These requirements have been addressed by work that was initiated during the first quarter of 1992 and continues. The work described by comment 1.a. would be in addition to that specified by the SOW.

The MFSSC and RMT acknowledge that several monitoring wells have not been sampled for water quality in the past two years. However, water level measurements are taken from all of the site wells on a quarterly basis. We believe that our knowledge-base of the site hydrogeology is current. We have identified no information to indicate that site conditions have changed appreciably during this 2 year time-frame.

We also disagree with you regarding the technical validity of re-sampling all site wells for water quality measurements; however, we are interested in seeing the RD/RA move forward in a timely and expeditious manner. Therefore, the MFSSC is willing to re-sample, on a one-time basis, all site monitoring wells for VOCs. This action could occur during either the third or fourth quarterly sampling rounds scheduled for 1992.

Upon receipt of the analytical results from this sampling event, we would re-evaluate the need for further sampling of this sort. The specific details of this sampling event would be described, as you have proposed, in a separate chapter to be inserted into the RD Work Plan.

- b. In accordance with page 2, section A.1. of the Statement of Work (SOW), RMT has initiated quarterly sampling of the wells specified in paragraphs (a) and (b). However, these specific provisions were not meant to be the only sampling necessary until the remedy components are constructed and operational. As described above, certain wells have not been sampled in close to 2 years. EPA was expecting one chapter of this work plan to outline, at least in preliminary form, an overall monitoring plan for the site; and that it would address the concern stated in a. above. This overall plan would take into account the fact that plans to monitor the remedy effectiveness are prepared later, in the RA Work Plan; but that monitoring of existing site conditions needs to continue until construction completion (?1994). A section should be added to the work plan to outline such monitoring program, and should address comment a. above.

Our review of this comment leads us to believe that the Agency is expecting submission of some type of an Interim site monitoring plan prior to submission of the required Remedy Monitoring Plan. We have carefully examined the ROD and SOW and do not find that it calls for an interim plan.

The quarterly sampling program was introduced to provide these Interim site details, until such time as the formal Remedy Monitoring Plan becomes effective. We have previously communicated to the EPA our intention to develop the Remedy Monitoring Plan after the technical specifics regarding the remedial design have been reviewed and approved by the Agency. We think it would be better to address possible changes to site monitoring at a later phase of the remedial design process. Failure to follow this course of action may result in an ongoing cycle of plan modifications as the remedy is modified to accommodate the input of the various reviewers. When the specific terms of the SOW were negotiated, the parties interpreted the overall site monitoring program referred to in sections A.1 (a) and (c) of the SOW and the Remedy Monitoring Plan as one and the same program.

One of the unfortunate difficulties in utilizing a document such as a Remedial Design Work Plan is the limited degree to which we can precisely forecast and communicate the endpoint of the design process. Since there is only a limited benefit to be derived from speculating as to the final content of the Remedy Monitoring Plan, we feel that it is more cost-effective to postpone this aspect of the project until a later phase of design. We will further clarify this intent in the final draft of the RD Work Plan.

The Agency's expectation for a specific chapter in the RD Work Plan describing an overall monitoring program for the site was not communicated to us prior to submittal of the draft RD Work Plan. It was our understanding of the SOW that the EPA and SC DHEC had already specified their respective needs and requirements with respect to this issue. We are, however, willing to accommodate the Agency reviewers by inserting an additional chapter into the RD Work Plan that provides additional details regarding the specifics of the one-time sampling event, described above.

- c. Page 2-9 of the work plan indicates that no contaminants were detected in stream water samples taken in February 1992. However, RW-05 had J-values of 5 and 3 ppb for TCE and PCE, respectively. While the meaning of these numbers may not be clear, sampling of both tributaries should not be permanently discontinued but rather should be added to the site monitoring scheme (as above) at some longer intervals, possibly yearly.

The Ambient Water Quality Criteria (freshwater chronic toxicity) for TCE and PCE are 21.9 ppm and 0.84 ppm, respectively. Since TCE and PCE were detected below the method detection limit at estimated levels of 0.005 ppm and 0.003 ppm, respectively, the insignificance of these values at surface water sampling station RW-05 seems obvious. Since only one surface water sample has been collected from stations RW-05 and RW-06, it is reasonable to conduct a verification round to confirm the February 1992 results. These samples will be included as a part of the overall well sampling event described above. Based upon the results of these samples, the need for further surface water samples will be re-evaluated.

2. The work proposed by RMT in the area to the northeast appears, in general, appropriate for characterizing groundwater contamination in this area. However, RMT should give careful consideration as to the most useful locations for the two well clusters, and consider installing an additional bedrock well across the tributary to the east-northeast. The proposed groundwater screening and 2 planned cluster well locations will not indicate whether the bedrock aquifer is contaminated across the tributary to the northeast. This is a real possibility given that: 1) excepting BW-2, BW-108 is the most contaminated bedrock well; 2) the RI work on lineaments (see Fig. 3-4, RI Report) suggested that one of the trends is NE-SW: if joints or fractures are controlling contaminant transport in the bedrock, contamination could possibly extend northeastward or eastward for some distance, beyond any contamination found in the saprolite. RI and recent sampling shows that, at times, bedrock wells such as BW-106, 108 and 109, which are located distant from the source areas, have shown more contamination than their co-located saprolite wells.

The bedrock aquifer may discharge to the tributary, as suggested by the upward vertical gradient present at SW/BW-108, but a bedrock well east of the creek may be necessary to confirm that. EPA recognizes that the specifics of well placement are to be prepared later in the preliminary design submittal. However, the results of the planned data collection effort can be expected to impact well placement, as suggested by the statement that, presently, the "system is envisioned to be oriented in a manner to intercept groundwater flow *at or near the MCL plume boundary*" (page 2-21, 3rd paragraph). Thus RMT needs to be clear on exactly what it foresees as being necessary to define bedrock aquifer contamination before the supplemental work is started.

To address your concerns in this area of the site, we propose to relocate the monitoring well nest identified as SW-201/BW-201 in the FSAP from its proposed location on Plate 1 of the RD Work Plan to a location approximately 150 feet to the northeast across the unnamed tributary from existing monitoring well nest SW-108/BW-108.

The specific location of this well nest will be determined in the field. It is our intention to install this well out of the alluvial sediments of the stream bed. To accomplish this, we will need to extend the access road, collect additional water quality samples utilizing the In-Situ "direct push" technology, field screen ground water samples with the Field GC, and identify an appropriate location for installing the well cluster such that the issue of VOC transport under the tributary, flow gradients and ground water discharge can best be addressed. This change in proposed location will be addressed by a Project Change Notice, formally modifying the affected portions of the FSAP.

3. The schedule proposed for completing the Remedial Design is extremely lengthy, considering the nature of the work. Standard timeframes for current CERCLA designs on other projects average 4 quarters (12 months). According to the schedule, the NPDES permit is not the limiting factor, as the treatment numbers are known fairly quickly and the permit only needs to be in hand prior to groundwater system startup. The only item that stands out is the "draft design" (?60% design?), which is allocated 4 months on the schedule. EPA, RMT and the Committee agreed during the CD negotiations that a 60% Design Package was not necessary, as long as it was understood that the 30% Design would be scrutinized somewhat more closely by the Agency. Given RMT's experience in designing SVE systems and groundwater treatment systems, EPA would expect that RMT could easily complete the work in a period comparable to that required for design at other Region IV Superfund sites.

The schedule durations proposed in the RD Work Plan are intentionally conservative given the fact that the remedial design process includes numerous regulatory review hold-points over which we have no control, but that can adversely influence the overall design schedule. We recognize that the design can be completed in a reduced time-frame, but we must have some assurance that we will not be penalized for unforeseen review delays over which we have no control.

Pursuant to our recent telephone discussions, we understand that the Agency is willing to establish interim schedule commitments that are based upon the date of approval for each of the major intermediate remedial design submittals (preliminary design and prefinal design). With this understanding, we are willing to accelerate the submittal of the final design package to a 12 month process provided the Agency agrees to a timely review and approval of the preliminary and prefinal design submittals. While we acknowledge your interim authorization to proceed with the remedial design work, we must insist that the actual timing of the schedule be tied to the final approval of the RD Work Plan. Our revised schedule for the Remedial Design Work Plan is attached for your review and approval.

We believe that this 12 month time-frame, starting from the date of Agency final approval of the Remedial Design Work Plan, is both achievable and reasonable. We recognize that the Agency has set a number of internal delivery dates for completion of this and other RD/RA projects. While we will take all reasonable steps to facilitate your internal planning processes, you should also recognize that we have no input to these scheduling processes and there are always site-specific considerations that must be addressed. Therefore, we believe that a 12 month time-frame best facilitates your internal commitments and addresses our concerns.

4. EPA had expected that RMT would propose in this work plan some additional groundwater modelling and associated data collection activities so as to upgrade and improve the conceptual understanding of the site hydrogeology. RMT does mention this possibility in the Field Sampling and Analysis Plan (FSAP) on page 2-1 (2nd/3rd bullets), and in this work plan (page 4-1, 4th bullet), but no specifics are proposed. To EPA's knowledge, little is known of boundary effects; storage values; degree of anisotropy; and the degree of communication among the saprolite, transition/fractured zone, and bedrock aquifers. Are other activities planned to allow development of a more thorough understanding of the site hydrogeology, for use in the capture zone analysis and in designing the groundwater system?

It has been our technical position throughout the SOW negotiations and preparation of the RD Work Planning documents that sufficient technical information was obtained during the RI/FS to support development of a remedial design for the Medley Farm site. We still believe this position to be valid.

In our experience, we have found that remediation of ground water and affected soils is most effectively accomplished by using an iterative process. The Medley Farm Site Remedy must address site-specific technical issues, but it must also be sufficiently flexible to accommodate a modification to the system at some time in the future. For these reasons, we have focused ourselves on a practical approach to the Medley Farm site.

Our approach to the remedy involves installation of the jet-pump ground water extraction system and soil vapor extraction system at locations where it is confirmed that ground water and soil impacts exist. Given the transport characteristics of VOCs in the subsurface, we have found that it is crucial that we initiate soil vapor extraction from vadose soils and ground water extraction efforts in the upper water table and transition zone down to competent bedrock as soon as possible. Since additional field investigations would only delay remedy implementation; rather than conducting discrete field investigations, we intend to accumulate additional knowledge of site conditions as the remedy is implemented.

We will be utilizing a capture-zone model to guide and optimize our placement of recovery wells and pumping tests (of some type) will be conducted at the time extraction wells are installed. However, many of the issues that you have raised in your comment letter such as boundary effects, storage values, degree of anisotropy, and the degree of communication among the saprolite, transition/fractured zone, and bedrock are more academic considerations that will be addressed as the remediation proceeds. These considerations, at least initially, do not appreciably influence the short-term implementation of the remedy.

For example, we initially plan to install site recovery wells such that they are screened through the saprolite and transition/fractured zone down to the top of competent rock. We do this to avoid drilling into competent bedrock and potentially introducing VOCs into this zone that may not have been there originally. As recovery efforts proceed, we will evaluate system performance and obtain information regarding the relative communication between fracture zones and other technical issues raised by your comment. However, the knowledge and experience we obtain will be of a more practical type that can then be directly applied to modifying and improving the remedy, a learning-by-doing philosophy.

Therefore, the answer to your query..."Are other activities planned to allow development of a more thorough understanding of the site hydrogeology...?" is a resounding yes. Flexibility and a thorough knowledge of site conditions will be an integral part of the remedial action and will be used to improve and modify the remediation system, as required.

5. South Carolina and EPA are not satisfied with the provision in the supplemental work (section 3, and page 5-17 and 5-13 of the FSAP) to discharge drilling fluids and well purge/ development water into the ground. Under the ESD SOPQAM, such fluids could be classified as "suspected hazardous." However, since the fluids contain undetectable or only very low levels of VOCs, EPA would consider the following to be acceptable. RMT should utilize its contractor's portable GC to sample these fluids at each well and then advise EPA of the results. EPA will then make the call as to the disposition of the fluids.

The reviewer's comment is acknowledged. During the initial stages of the project, all drilling fluids, development water, and purge water will be collected in a 55-gallon drum to be situated near the respective monitoring well. Periodically, RMT will sample the contents of the drum with a Photo-Vac Portable Field GC and report the results to the EPA. Following EPA review and approval, the contents of the drum will be allowed to percolate back into the soil in a small trench placed near the respective well. RMT will issue a project change notice to the US EPA revising the respective chapters of the FSAP to incorporate this procedure.

SPECIFIC COMMENTS

1. *Page 2-1, bottom*

The description of the removal should include a brief description of what was done with the liquids (lagoon contents).

The reviewer's comment is acknowledged. The following description of the disposition of lagoon contents will be inserted into the RD Work Plan text. (Page 2-1, Section 2.2, 2nd paragraph):

..."Approximately 70,000 gallons of water were drained from the six lagoons located on-site and processed through a pressurized filtration system employing activated carbon for removal of organics. Treated effluent was analyzed to ensure that State discharge standards were achieved prior to release into Jones Creek (US EPA Record of Decision, 1991)."

2. *Page 2-5, 2nd and 3rd paragraphs*

There should be a sentence on why the particular contaminants were selected as the contaminants of concern (i.e. risk from future use scenario).

The reviewer's comment is acknowledged. The following sentence describing the criteria for listing of the site Constituents of Concern will be added to the second paragraph of Section 2.3:

..."The chemicals shown in Table 2-1 are a comprehensive listing of the chemical constituents detected at or above the CRQL, at least once, in a given environmental media."

Table 2-1 will be relabelled "Chemicals of Potential Concern for Medley Farm Site by Medium".

3. *Page 2-6, Table 2-1*

Under "Groundwater (Bedrock)," the X should be on 1,2-dichloroethane, not on 1,1,2,2-tetrachloroethane. Also, 1,2-dichloroethene (total) gets an X.

Table 2-1 will be modified as shown on the following page:

TABLE 2-1

CHEMICALS OF POTENTIAL CONCERN FOR MEDLEY FARM SITE BY MEDIUM

	Surface Soils	Ground Water (Saprolite)	Ground Water (Bedrock)
<i>Volatile Organic Compounds</i>			
1,1-Dichloroethene		X	X
1,1-Dichloroethane		X	
1,1,1-Trichloroethane		X	X
1,1,2-Trichloroethane	X	X	
1,1,2,2-Tetrachloroethane	X		
1,2-Dichloroethane			X
1,2-Dichloroethene (total)	X	X	X
1,2-Dichloropropane	X		
2-Butanone			X
Acetone			X
Benzene			X
Chloroform			X
Chloromethane		X	
Ethylbenzene	X		
Methylene Chloride	X	X	X
Styrene	X		
Tetrachloroethene	X	X	X
Trichloroethene	X	X	X
Vinyl Chloride	X		
<i>Semi-volatile Organic Compounds</i>			
1,2,4-Trichlorobenzene	X		
Butylbenzylphthalate	X		
Di-n-butylphthalate	X		
Di-n-octylphthalate	X		
bis(2-Ethylhexyl)phthalate	X		

X-Denotes Chemical Detected in Medium

*-Reference: US EPA Record of Decision, Medley Farm Site, 1991.

4. *Page 2-8, 4th paragraph*

Which two clusters had the upward gradients needs to be clarified.

Paragraph 4 on page 2-8 will be revised to read..."Water level measurements made in May 1992 from the six saprolite/bedrock well clusters indicate both upward and downward vertical hydraulic gradients of varying magnitude. Positive or upward vertical gradients were observed at monitoring well clusters SW-106/BW-106 and PZ-1/BW-3. Negative or downward vertical gradients were observed at monitoring well clusters SW-1/BW-1, SW-4/BW-4, SW-108/BW-108, and SW-109/BW-109.

5. *Page 2-9, section 2.5*

Surface water should not be excluded here. At least where the samples were collected from should be mentioned, and the 2/92 data points (RW/SW 05 and 06) should be shown on the map (plate 1). As noted in 1c above, the results from RW-05 call into question the assumed "absence" of VOCs in the tributary.

The reviewers comment is noted. Plate 1 will be revised to show the surface water and stream sediment sampling locations (RW/SS-5 and RW/SS-6). In addition, the following discussion will be inserted into the work plan after Section 2.5.3 on page 2-15.

2.5.4 Surface Water Results

In accordance with the Medley Farm Statement of Work (SOW), two surface water samples (RW-5 and RW-6) were collected from the unnamed tributaries of Jones Creek that drain the site from the northeast and southeast. Surface water sampling locations are shown on Plate 1 of Appendix A. Analytical results from the first quarterly sampling episode conducted in February 1992 identified trichloroethene and tetrachloroethene below method detection limits at concentrations of 0.005 and 0.003 ppm, respectively. These results will be substantiated in an upcoming quarterly sampling event. Based on the results of the confirmation analyses, a decision will be made regarding the need to continue monitoring stream sediments at the site.

6. *Page 2-18, section 2.6*

The RI findings concerning hydraulic conductivity values, which are summarized on pages 90-93 of the RI Report, have a large bearing on fate and transport of site contaminants. They should at least be mentioned here (or somewhere).

The reviewer's comment is noted. Hydraulic conductivity values are presented on the hydrologic cross-sections included in Appendix A of the RD Work Plan. To supplement these cross-sections, the following narrative will be inserted after the first complete paragraph on page 2-8.

..."According to data presented in the Medley Farm RI Report, hydraulic conductivity values for wells screened in the saprolite range from 3×10^{-3} to 3×10^{-5} cm/sec. With the exception of the deep bedrock wells (BW-111 and BW-112), hydraulic conductivity values estimated in wells screened in fractured bedrock range from 7×10^{-5} to 4×10^{-3} cm/sec. Hydraulic conductivity values for the deep bedrock wells were estimated at approximately 10^{-7} cm/sec."

7. *Page 2-21, last paragraph*

EPA understands that system testing will be required to prove the site-specific effectiveness of the extraction process by jet pumps. Nonetheless, RMT should consider, and plan for, how to proceed in the event that the jet pumps cannot adequately do what is needed. There should at least be some sort of alternative idea.

The site-specific effectiveness of jet-pumps has already been demonstrated at numerous sites across the South Carolina Piedmont and Region IV. The technical limitation of a jet pump is that the effective pumping depth of the venturi assembly is limited to approximately 33 feet (or 1 atmosphere in pressure) below the depth at which the unit is installed. These types of pumping systems are ideally suited to the low well yields which are typically encountered in this part of the country. In the unlikely event jet-pumps do not achieve the desired remedial objectives, then we would consider one or more of the following measures:

- **Jet pump assemblies are available in a variety of sizes. If system capacity is the problem, a larger jet pump venturi could be installed in the affected recovery well(s).**
- **The centrifugal pump motor, impeller assembly, or both might also be replaced to increase system capacity.**
- **Additional jet pump extraction wells could be added to the existing loop.**
- **A separate loop of additional jet pump wells might also be considered.**
- **SVE might be tied into the jet pump system, thereby adding the potential for vadose recovery of VOC while increasing the observed well yield of the affected recovery well(s).**
- **Air sparging might also be considered as an addition to the recovery well systems.**

8. *Page 3-5, section 3-5*

RMT should issue a brief technical memorandum (or copy us an internal work plan) on what the treatability tests consist of, shortly before they are done. The Agency will not review this document (other than verbally/informally) but it will be useful file information. Also, EPA needs a short memo on the results before preparation of the prefinal/final design submittal. (This document likewise will not be formally reviewed.)

We agree to issuing brief technical memorandums to the Agency documenting treatability testing for the project file. RMT will provide the necessary documentation at such times as they are deemed appropriate.

9. *Section 5, Schedule*

After EPA approves this Work Plan, RMT should send in a schedule list with the actual dates for deliverables submission, based on the date of EPA approval.

We concur that a schedule list complete with deliverables and delivery dates is reasonable and will be submitted to the Agency following approval of the RD Work Plan. We have included a revised version of the RD Work Plan Schedule with this document for Agency review and approval.

SDMS

Site Name: Medley Farms Box 4 of 13

Nature of Material:

Map: ☒

Computer Disks: _____

Photos:

CD-ROM:

Blueprints: _____

Oversized Report: _____

Slides:

Log Book: _____

Other (describe): _____

Amount of material: 11 REMEDIAL DESIGN PROJECT SCHEDULE

Please contact the appropriate Records Center to view the material.